

**Display Master: Key Idea: 9s**

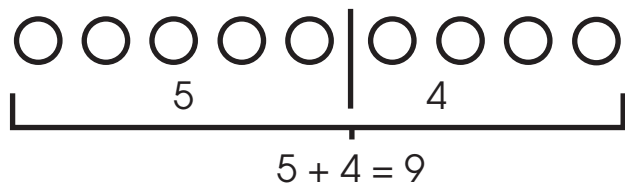
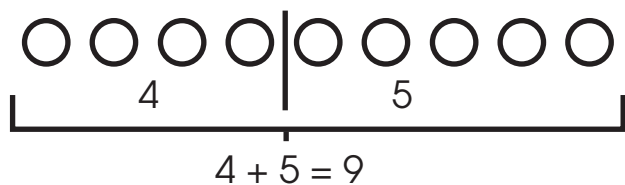
- Unknown facts can be found by taking apart a known fact.

## Display Master: Partially Completed Multiplication Table

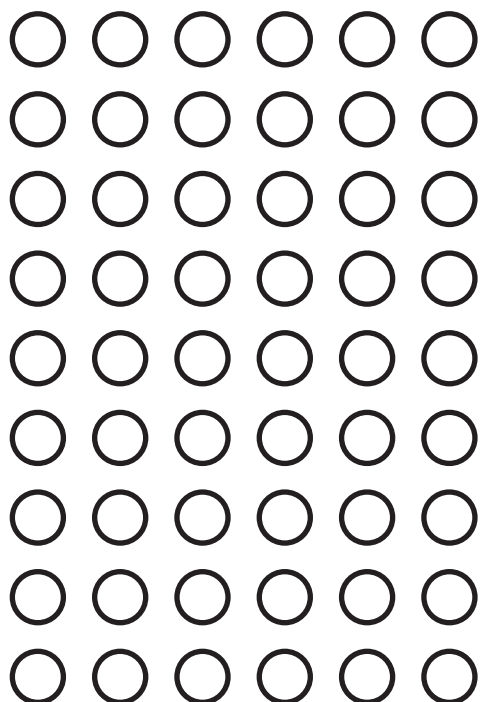
x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8		10	11	12
2	2	4	6	8	10	12	14	16		20	22	24
3	3	6	9	12	15	18	21	24		30	33	36
4	4	8	12	16	20	24	28	32		40	44	48
5	5	10	15	20	25	30	35	40		50	55	60
6	6	12	18	24	30		42	48		60	66	
7	7	14	21	28	35	42	49	56		70	77	84
8	8	16	24	32	40	48	56	64		80	88	96
9												
10	10	20	30	40	50	60	70	80		100	110	120
11	11	22	33	44	55	66	77	88		110	121	132
12	12	24	36	48	60		84			120	132	

## Display Master: Take Apart 9

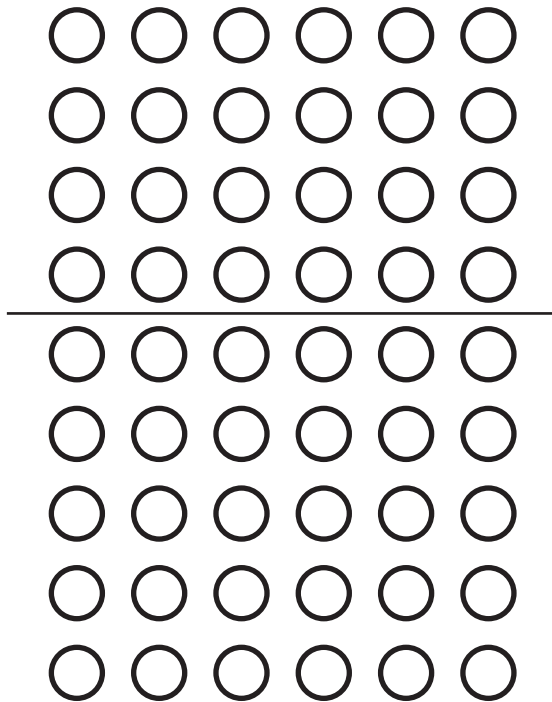
$$9 = 4 + 5$$



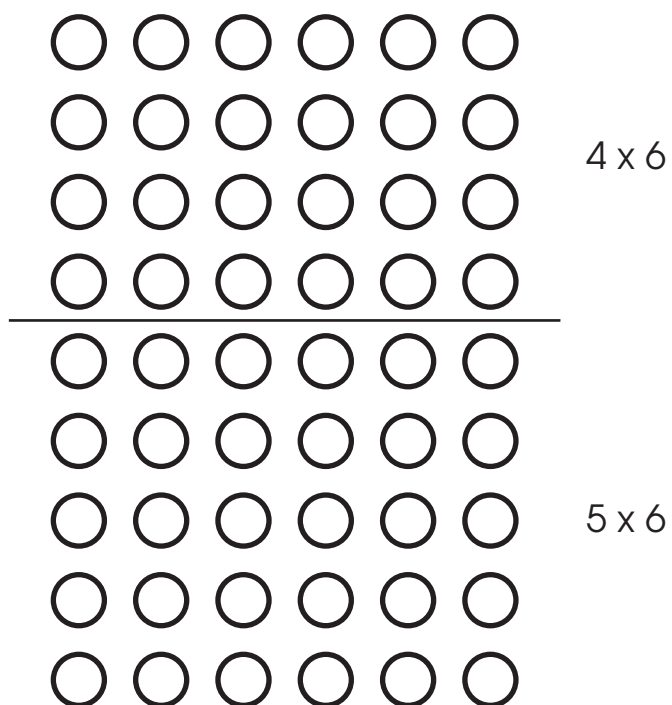
**Display Master: 9 x 6 Array A**



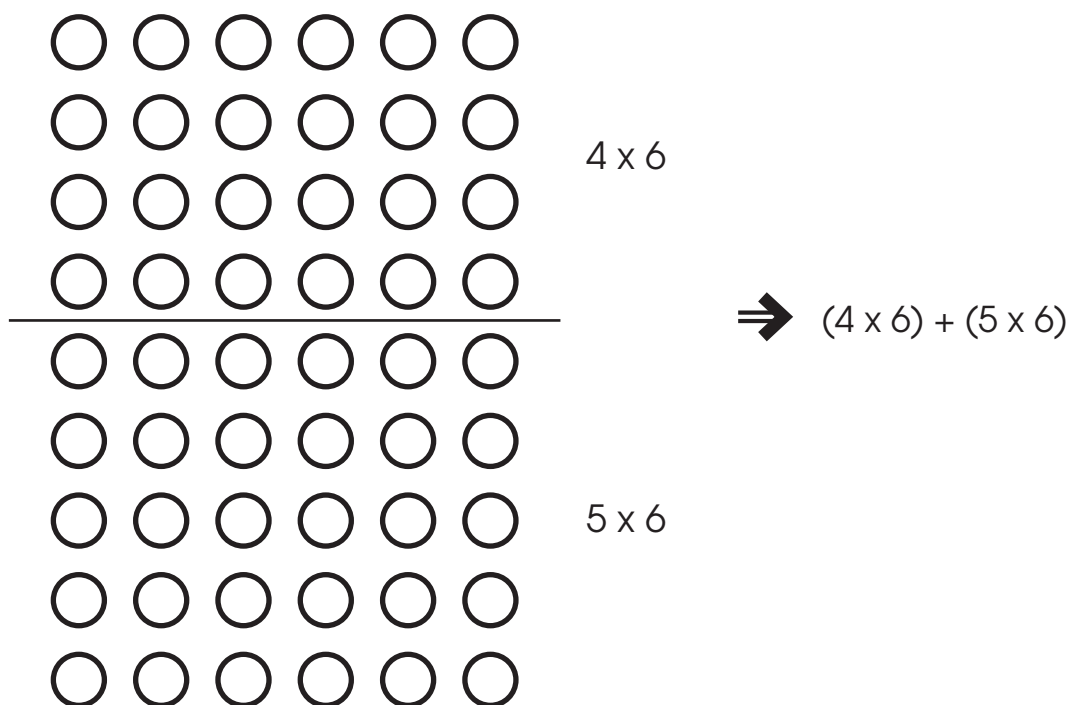
**Display Master: 9 x 6 Array B**



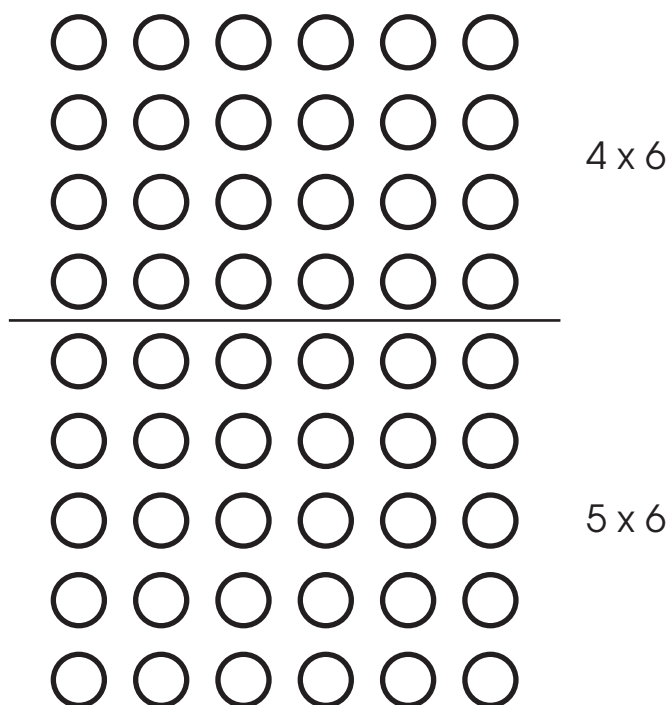
**Display Master: 9 x 6 Array C**



**Display Master: 9 x 6 Array D**



**Display Master: 9 x 6 Array E**



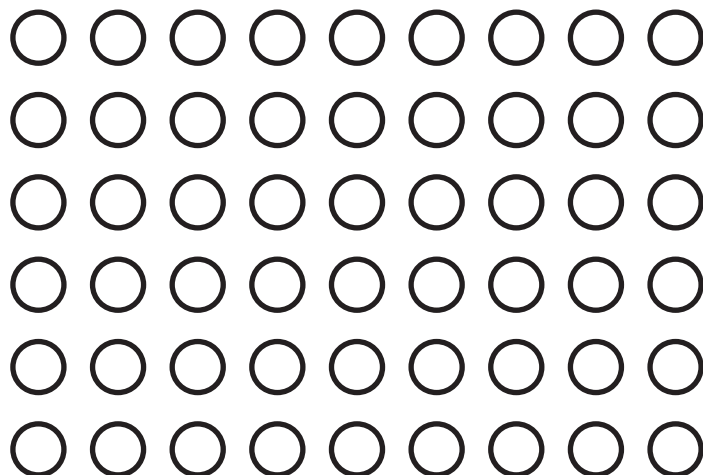
$$\Rightarrow (4 \times 6) + (5 \times 6)$$

$$\Downarrow \quad \Downarrow$$

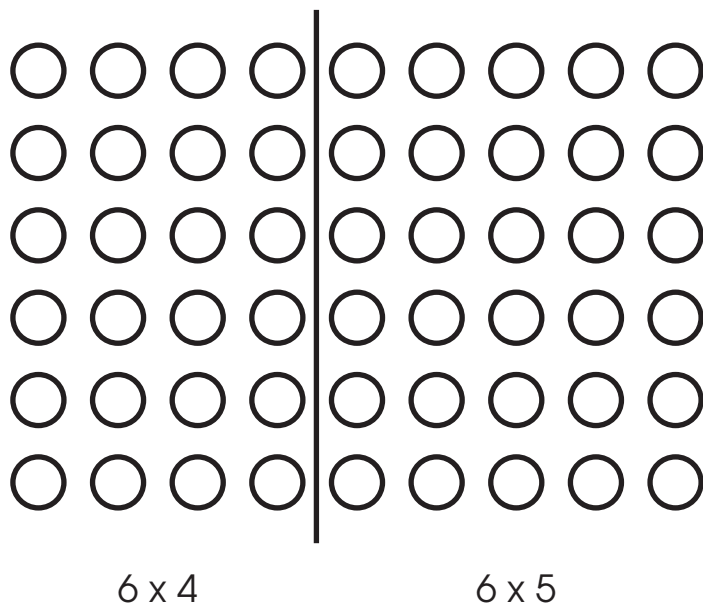
$$24 + 30 = 54$$



**Display Master: 6 x 9 Array A**



**Display Master: 6 x 9 Array B**



## Display Master: Taking Apart 9 into 4 and 5 A

X	4	5	$4s + 5s$	9
1	4	5	$4 + 5$	9
2	8	10	$8 + 10$	18
3	12	15		
4	16	20		
5	20	25		
6	24	30		
7	28	35		
8	32	40		
9	36	45		
10	40	50		
11	44	55		
12	48	60		

## Display Master: Taking Apart 9 into 4 and 5 B

X	4	5	$4s + 5s$	9
1	4	5	$4 + 5$	9
2	8	10	$8 + 10$	18
3	12	15	$12 + 15$	27
4	16	20	$16 + 20$	36
5	20	25	$20 + 25$	45
6	24	30	$24 + 30$	54
7	28	35	$28 + 35$	63
8	32	40	$32 + 40$	72
9	36	45	$36 + 45$	81
10	40	50	$40 + 50$	90
11	44	55	$44 + 55$	99
12	48	60	$48 + 60$	108

**Display Master: 9s**

									4 + 5				
x	1	2	3	4	5	6	7	8	9	10	11	12	
1	1	2	3	4	5	6	7	8	9	10	11	12	
2	2	4	6	8	10	12	14	16	18	20	22	24	
3	3	6	9	12	15	18	21	24	27	30	33	36	
4	4	8	12	16	20	24	28	32	36	40	44	48	
5	5	10	15	20	25	30	35	40	45	50	55	60	
6	6	12	18	24	30		42	48	54	60	66		
7	7	14	21	28	35	42	49	56	63	70	77	84	
8	8	16	24	32	40	48	56	64	72	80	88	96	
4 + 5	9	9	18	27	36	45	54	63	72	81	90	99	108
	10	10	20	30	40	50	60	70	80	90	100	110	120
	11	11	22	33	44	55	66	77	88	99	110	121	132
	12	12	24	36	48	60		84	96	108	120	132	